

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
KIM, Kyeong Jin

Customer No.: 30827

Application No.: 10/015,701

Confirmation No.: 6382

Filed: December 17, 2001

Art Unit: 2871

For: METHOD FOR MANUFACTURING LIQUID
CRYSTAL DISPLAY DEVICE

Examiner: Rude, Timothy L.

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Commissioner for Patents
P.O. Box 1450
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APPEAL BRIEF

Sir:

In response to the Notice of Appeal filed May 4, 2010 in response to the Advisory Action mailed April 28, 2010 and a Final Rejection of all pending claims mailed on January 6, 2010, the Appellant hereby submits this Appeal Brief.

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This brief contains items under the following headings as required by 37 C.F.R.
§ 41.37(c):

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I. REAL PARTY INTEREST

The real party in interest for this appeal is LG Display Co., Ltd..

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Total Number of Claims in the Application.

There are 30 claims pending in this application.

Current Status of Claims:

Claims canceled: 2, 3, 10, 11, 20 and 29

Claims withdrawn from consideration but not canceled: 6, 8, 16 and 21-28

Claims pending: 1, 4-9, 12-16, 17-19 and 21-28

Claims allowable: None

Claims rejected: 1, 4, 5, 7, 9, 12-15 and 17-19

Claims on appeal: 1, 4, 5, 7, 9, 12-15 and 17-19

IV. STATUS OF AMENDMENTS

The Examiner issued a final Office Action on January 6, 2010 (hereinafter “final Office Action”). In the final Office Action, the Examiner rejected claims 1, 4, 5, 7, 9, 12-15 and 17-19. An Amendment (hereinafter “Amendment”) under 37 C.F.R. § 1.116 was filed on April 6, 2010, amending claim 1 to correct minor informalities. The Amendment was made as recommended by the Examiner in the final Office Action, and to present the rejected claims in better form for consideration on appeal. An Advisory Action (hereinafter “Advisory Action”) was mailed on April 28, 2010, maintaining the rejection of claims 1, 4, 5, 7, 9, 12-15 and 17-19 and indicating that the amendments to claim 1 were entered for purposes of appeal. Accordingly, claims 1-14 are the claims on appeal, which are reflected in the Claims Appendix.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 is directed to a method of forming a liquid crystal display (LCD) panel described throughout the specification, at least, in paragraphs ¶¶ 0036-56. The claimed method includes forming a thin film transistor and a pixel electrode on a first substrate (Figs. 2A, 2B, 3A, 3B, 5-8; ¶¶ 0036-40); forming a dielectric frame having a first height (Fig. 2C, “67”, ¶¶ 0041, 0050) and a sealant structure having a second height on a second substrate (Fig. 2D, “69”, ¶¶ 0043-44), the dielectric frame including a material having a small dielectric constant, the material including photoacrylate (¶¶ 0043-44); dispensing a plurality of droplets of liquid crystal on the first substrate having no dielectric frame so that the plurality of droplets of liquid crystal on the first substrate are spaced with each other (Figs. 2D, 4, “100”, ¶¶ 0051, 0056); attaching the first and second substrates to each other for forming the LCD panel, wherein a primary cell gap of the LCD panel is formed under vacuum state and then is exposed to atmospheric pressure, so that a secondary cell gap of the LCD panel is formed by the amount of the liquid crystal and the pressure difference between the interior of the LCD panel and the atmosphere (Fig. 2E, ¶ 0051); and completely hardening the sealant structure by exposure to UV ray under the atmospheric pressure (Fig. 2E, ¶ 0051), wherein the second height of the sealant structure is higher than the first height of the dielectric frame (Fig. 2E, ¶¶ 0052-53), a height difference between the first height and the second height is more than $1\mu\text{m}$ so that the height difference between the sealant structure and dielectric frame prevent the generation of bubble in liquid crystal, allows the dispensed liquid crystal to be uniformly distributed and not to hinder the dispensed liquid crystal from being moved and uniformly distributed between the first substrate and the second substrate (Fig. 2E, ¶¶ 0052-53, Table I), wherein the first height the dielectric frame is a range of 1-2 μm and the second height of the sealant structure is in a range of 5-8 μm (Table I), and

wherein the second height of the sealant structure is proportional to the first height of the dielectric frame (Fig. 2E, ¶¶ 0052-53, Table I).

VI. GROUND OF REJECTION TO BE REVIEWED ON APPEAL

(1) Whether the rejection of claims 1, 4, 5, 7, 9 and 11-14 is proper under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,130,729 issued to Oh *et al.* (hereafter “Oh”) in view of U.S. Patent No. 6,573,965 issued to Liu *et al.* (hereafter “Liu”), U.S. Patent No. 6,055,035 issued to Von Gutfield *et al.* (hereafter “Von Gutfield”), U.S. Patent No. 6,515,718 issued to Kishimoto *et al.* (hereafter “Kishimoto”), U.S. Patent No. 7,224,421 issued to Takeda *et al.* (hereafter “Takeda”), U.S. Patent No. 5,907,380 issued to Lien, U.S. Patent No. 5,511,591 issued to Abe, U.S. Publication No. 2001/0004281 issued to Sasaki further in view of U.S. Patent No. 7,136,140 issued to Inoue *et al.* (hereafter “Inoue”). See the final Office Action at pages 4-20.

(2) Whether the rejection of claim 15 is proper under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and further in view of U.S. Patent No. 6,603,528 to Tanaka *et al.* (hereafter “Tanaka”). See the final Office Action at page 20.

(3) Whether the rejection of claims 17-19 is proper under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and in view of U.S. Patent No. 6,100,953 to Kim *et al.* (hereafter “Kim”). See the final Office Action at page 21.

VII. ARGUMENT

A. **The rejection of claims 1, 4, 5, 7, 9 and 11-14 under 35 U.S.C. § 103(a) as being unpatentable over Oh, in view of Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, and Sasaki further in view of Inoue is improper and should be reversed.**

To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See MPEP §2143; *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” See *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). Furthermore, if an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

1. Independent claim 1

The combination of Oh in view of Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest every element of claim 1. Alternatively, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. Claim 1 is reproduced below as it stands after the Advisory Action.

1. A method of forming a liquid crystal display (LCD) panel comprising:
 - forming a thin film transistor and a pixel electrode on a first substrate;
 - forming a dielectric frame having a first height and a sealant structure having a second height on a second substrate, the dielectric frame including a material having a small dielectric constant, the material including photoacrylate;
 - dispensing a plurality of droplets of liquid crystal on the first substrate having no dielectric frame so that the plurality of droplets of liquid crystal on the first substrate are spaced with each other;
 - attaching the first and second substrates to each other for forming the LCD panel, wherein a primary cell gap of the LCD panel is formed under vacuum state and then is exposed to

atmospheric pressure, so that a secondary cell gap of the LCD panel is formed by the amount of the liquid crystal and the pressure difference between the interior of the LCD panel and the atmosphere; and

completely hardening the sealant structure by exposure to UV ray under the atmospheric pressure,

wherein the second height of the sealant structure is higher than the first height of the dielectric frame, a height difference between the first height and the second height is more than $1\mu\text{m}$ so that the height difference between the sealant structure and dielectric frame prevent the generation of bubble in liquid crystal, allows the dispensed liquid crystal to be uniformly distributed and not to hinder the dispensed liquid crystal from being moved and uniformly distributed between the first substrate and the second substrate,

wherein the first height the dielectric frame is a range of $1\text{--}2\mu\text{m}$ and the second height of the sealant structure is in a range of $5\text{--}8\mu\text{m}$, and

wherein the second height of the sealant structure is proportional to the first height of the dielectric frame.

First, the combination of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest the features of “forming a dielectric frame having a first height and a sealant structure having a second height on a second substrate, the dielectric frame including a material having a small dielectric constant, the material including photoacrylate; dispensing a plurality of droplets of liquid crystal on the first substrate having no dielectric frame so that the plurality of droplets of liquid crystal on the first substrate are spaced with each other; attaching the first and second substrates to each other for forming the LCD panel” recited in claim 1.

Claim 1 is directed to a method of forming a liquid crystal display (LCD) panel, and it requires dispensing liquid crystal on the first substrate and forming a dielectric frame and a sealant on the second substrate that is attached to the first substrate where a thin film transistor and a pixel electrode are formed, without dielectric frame. In the claimed invention, a sealant and a dielectric frame used for multi-domain effects are formed on the same second substrate with a specific height difference (i.e., more than $1\mu\text{m}$), which is

discussed below, and liquid crystal is dispensed on the first substrate where a thin film transistor and a pixel electrode are formed, without a dielectric frame. See the instant application at ¶¶ 0043-44, 0051-54. By doing so, an LCD panel can be manufactured in a shorter period of time. See id. at ¶ 0056. Also, the specific height difference between the sealant and the dielectric frame allows the liquid crystal dispensed on the first substrate to be uniformly distributed and generation of bubbles are minimized or prevented during the manufacturing process, especially when the first and second substrates are attached together. See id. at ¶¶ 0052-56; Table I.

The Examiner admits that the main reference Oh does not disclose the aforementioned features of claim 1, and then cites Liu and Von Gutfield to cure the deficient teaching of Oh. See the final Office Action at pages 6-9. However, none of Liu and Von Gutfield, either alone or in combination, teaches or suggests forming a dielectric frame and a sealant on the second substrate that is attached to the first substrate where a thin film transistor and a pixel electrode are formed, without a dielectric frame. Nor do they disclose the specific height difference between the sealant and the dielectric frame that are formed on the second substrate. As shown in Fig. 5, Liu discloses that the bumps 309, 409 are formed on both substrates. Von Gutfield is merely cited by the Examiner as allegedly teaching “uniformly dispensing liquid crystal on discrete areas (pixel areas and non-pixel/non-display areas) of the first substrate.” See the final Office Action at page 7.

Thus, the Appellant respectfully submits that the combination of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest the above recited features of claim 1. Even if it does, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. Because the bumps 309, 409 of Liu are formed

on both substrates in an alternative fashion as shown in Fig. 5, the liquid crystal dispensed on one of the substrates as allegedly taught by Von Gutfield would not move fast and uniformly be distributed when the two substrates are attached to each other as compared with the claimed invention, which would counteract reducing the time required for manufacturing an LCD panel, one of the principles of the present invention.

At the end of his analysis, the Examiner cites Fig. 33c and associated text of Inoue as allegedly teaching “dispensing liquid crystal on the first substrate having no dielectric frame.” See the final Office Action at pages 16-18. However, as in Liu and Von Gutfield, Inoue does not teach or suggest the aforementioned two features of claim 1. In addition, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. None of the cited references including Oh, Liu, Von Gutfield and Inoue recognizes the problems that the dielectric frames formed on both substrates slow down the movement and uniform distribution of the liquid crystal provided between the two substrates, thereby increasing the time required for manufacturing an LCD panel, and that bubbles in the dispensed liquid crystal may be generated without an appropriate height relationship between the dielectric frame and the sealant. See the instant application at Figs. 1A, 1B, Table I, ¶¶ 0015, 0056. A patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. See MPEP § 2141.

Second, the combination of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest the features of “wherein the second height of the sealant structure is higher than the first height of the dielectric frame, a height difference between the first height and the second height is more than 1 μm so that the height difference

between the sealant structure and dielectric frame prevent generation of bubble in liquid crystal, allows the dispensed liquid crystal to be uniformly distributed and not to hinder the dispensed liquid crystal from being moved and uniformly distributed between the first substrate and the second substrate, wherein the first height the dielectric frame is a range of 1-2 μm and the second height of the sealant structure is in a range of 5-8 μm ” recited in claim 1.

As discussed above, in the claimed invention, the specific height difference between the sealant and the dielectric frame allows the liquid crystal dispensed on the first substrate to be uniformly distributed and generation of bubbles are minimized or prevented during the manufacturing process, especially when the first and second substrates are attached together. The Examiner admits that the main reference Oh does not teach or suggest either the claimed height difference between the sealant and the dielectric frame or the claimed ranges of the heights of the sealant and the dielectric frame. See the final Office Action at page 9. The Examiner then cites Kishimoto and Takeda to cure the deficient teaching of Oh. See the final Office Action at pages 9-12.

As for the Kishimoto reference, the Examiner alleges that “Kishimoto discloses the motivation to optimize the height of a dielectric structure is to account for the relative dielectric constants of the respective components (col. 18, lines 21-23). In other words, the height is made sufficient to achieve the desired dielectric effect given the relative dielectric strength of the material used.” See the final Office Action at page 9. The Examiner appears to admit that Kishimoto does not disclose the aforementioned features recited in claim 1, but *inter alia* alleges that they are merely an optimization. The Appellant respectfully disagrees with the Examiner and directs the Board’s attention to Table I of the present invention. Table I clearly shows that the inventor performed a series of experiments with different heights of

the sealant and the dielectric frame to discover that when the height difference is more than $1\mu\text{m}$, generation of bubbles in the dispensed liquid crystal is minimized or prevented and the dispensed liquid crystal is moved and uniformly distributed between the two substrates during the manufacturing process. See the instant application at ¶¶ 0052-53, Table I. Thus, the claimed height difference is not merely an outcome of optimization as alleged by the Examiner.

To support the mistaken view, the Examiner further alleges that “[t]he height difference between the sealant structure and dielectric frame allows the dispensed liquid crystal to be uniformly distributed on the first substrate, since the liquid crystal is liquid and it does ultimately move to become a uniform layer between to [sic] substantially parallel substrates [inherently required to comprise a functional LCD].” See the final Office Action at page 11. However, claim 1 is directed to a method of manufacturing an LCD panel and one of the principles of the claimed invention is to reduce the time required for manufacturing an LCD panel, as discussed above. Therefore, it is irrelevant in determining the patentability of the claimed invention whether or not liquid crystal ultimately moves to become a uniform layer in a completed LCD device.

With respect to the Takeda reference, the Examiner alleges with reference to Fig. 100A that “Takeda teaches numerous embodiments, at least one of which uses of $1.5\mu\text{m}$ protrusions [Applicant’s dielectric frames] in a cell with thickness $3.5\mu\text{m}$ [col. 24, line 32 through col. 25, line 5] in order to achieve good multi-domain performance with fast switching...” See the final Office Action at page 10. The cited portion of the specification actually corresponds to Fig. 19 in Takeda. First of all, as in the Liu reference, Figs. 19 and 100A in Takeda show protrusions formed on both substrates different from the claimed invention. Assuming *arguendo* that the protrusions 20A and 20B in Fig. 19 of Takeda are

formed only one of the substrates, the height of the combined protrusions would then become $3\text{ }\mu\text{m}$ (i.e., $1.5\text{ }\mu\text{m} + 1.5\text{ }\mu\text{m}$) with a cell thickness of $3.5\text{ }\mu\text{m}$, and one of ordinary skill in the art would understand that the height difference between the sealant and the dielectric frame would then become about $0.5\text{ }\mu\text{m}$, which thus obviates the claimed range of the height difference (i.e., more than $1\text{ }\mu\text{m}$). Also, it is noted that the “fast switching” in Takeda refers to the movement of liquid crystal during operation of the multi-domain liquid crystal cell with an application of voltage, whereas in the context of the claimed invention, it refers to the movement of liquid crystal during the manufacturing process of an LCD panel, especially when the two substrates are attached to each other.

Thus, the Appellant respectfully submits that the combination of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest the above recited features of claim 1. Even if it does, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. Because the protrusions in Figs. 19 and 100A of Takeda are formed on both substrates, the liquid crystal dispensed on one of the substrates as allegedly taught by Von Gutfield would not move fast and uniformly be distributed when the two substrates are attached to each other as compared with the claimed invention, which would counteract reducing the time required for manufacturing an LCD panel, one of the principles of the present invention.

Accordingly, the Appellant respectfully submits that claim 1 is allowable over the combination of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue.

2. Dependent claims 4, 5, 7, 9 and 11-14

Claims 4, 5, 7, 9 and 11-14 depend directly or indirectly from independent claim 1. Accordingly, the Appellant respectfully submits that these claims are also allowable over the

combined teaching of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue for at least the same reasons set forth with respect to independent claim 1.

B. The rejection of claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and further in view of to Tanaka *et al.* is improper and should be reversed.

Claim 15 depends from independent claim 1. As discussed with respect to claim 1, the combined teaching of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest each and every limitation of claim 1. Alternatively, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. Tanaka is merely cited by the Examiner as allegedly teaching “the use of polyimide... for forming an alignment film” and does not cure the deficient teaching of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue. See the final Office Action at page 20. Accordingly, the Appellant respectfully submits that claim 15 is allowable for at least the same reasons set forth with respect to claim 1.

C. The rejection of claims 17-19 under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and in view of Kim is improper and should be reversed.

Claims 17-19 depend directly or indirectly from independent claim 1. As discussed with respect to claim 1, the combined teaching of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue does not teach or suggest each and every limitation of claim 1. Alternatively, it would not have been obvious to one of ordinary skill in the art to combine the cited references and arrive at the claimed invention with any reasonable expectation of success. Kim is merely cited by the Examiner as allegedly teaching “the use of negative uniaxial and negative biaxial phase compensation films” and does not cure the deficient

teaching of Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue. See the final Office Action at page 21. Accordingly, the Appellant respectfully submits that claims 17-19 are allowable for at least the same reasons set forth with respect to claim 1.

VIII. CONCLUSION

For the reasons set forth above, the Appellant respectfully requests that the Honorable Board find:

- (1) The rejection of claims 1, 4, 5, 7, 9 and 11-14 under 35 U.S.C. § 103(a) as being unpatentable over Oh, in view of Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, and Sasaki further in view of Inoue is improper and should be reversed.
- (2) The rejection of claim 15 under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and further in view of to Tanaka *et al.* is improper and should be reversed.
- (3) The rejection of claims 17-19 under 35 U.S.C. § 103(a) as being unpatentable over Oh, Liu, Von Gutfield, Kishimoto, Takeda, Lien, Abe, Sasaki and Inoue as applied to claims 1, 4, 5, 7, 9 and 11-14 and in view of Kim is improper and should be reversed.

The Claims Appendix contains the set of claims involved in the present appeal.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. § 1.136, and any additional fees required under 37 C.F.R. § 1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

Dated: July 1, 2010

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Eric J. Nuss", is written over a horizontal line.

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CLAIMS APPENDIX

Claims Involved in the Appeal of Application Serial No. 10/015,701

1. (Previously Amended) A method of forming a liquid crystal display (LCD) panel comprising:
 - forming a thin film transistor and a pixel electrode on a first substrate;
 - forming a dielectric frame having a first height and a sealant structure having a second height on a second substrate, the dielectric frame including a material having a small dielectric constant, the material including photoacrylate;
 - dispensing a plurality of droplets of liquid crystal on the first substrate having no dielectric frame so that the plurality of droplets of liquid crystal on the first substrate are spaced with each other;
 - attaching the first and second substrates to each other for forming the LCD panel, wherein a primary cell gap of the LCD panel is formed under vacuum state and then is exposed to atmospheric pressure, so that a secondary cell gap of the LCD panel is formed by the amount of the liquid crystal and the pressure difference between the interior of the LCD panel and the atmosphere; and
 - completely hardening the sealant structure by exposure to UV ray under the atmospheric pressure,
 - wherein the second height of the sealant structure is higher than the first height of the dielectric frame, a height difference between the first height and the second height is more than $1\mu\text{m}$ so that the height difference between the sealant structure and dielectric frame prevent the generation of bubble in liquid crystal, allows the dispensed liquid crystal to be uniformly distributed and not to hinder the dispensed liquid crystal from being moved and uniformly distributed between the first substrate and the second substrate,
 - wherein the first height the dielectric frame is a range of $1\text{-}2\mu\text{m}$ and the second height of the sealant structure is in a range of $5\text{-}8\mu\text{m}$, and
 - wherein the second height of the sealant structure is proportional to the first height of the dielectric frame.

2. (Cancelled)

3. (Cancelled)

4. (Original) The method of claim 1, further comprising forming an electric field inducing window in the pixel electrode.

5. (Previously Amended) The method of claim 4, wherein the electric field inducing window has a slit shape.

6. (Withdrawn) The method of claim 1, wherein forming the thin film transistor includes:

- forming a gate electrode on the first substrate;
- forming a gate insulating film on the first substrate;
- forming a semiconductor layer on the gate insulating film; and
- forming source and drain electrodes on the semiconductor layer.

7. (Previously Presented) The method of claim 1, wherein the thin film transistor is formed to have an L-shaped channel.

8. (Withdrawn) The method of claim 1, wherein the thin film transistor is formed to have a U-shape.

9. (Original) The method of claim 1, wherein the dielectric frame drives the liquid crystal in various directions.

10-11. (Cancelled)

12. (Original) The method of claim 1, further comprising forming a common electrode on the second substrate.

13. (Original) The method of claim 12, wherein the dielectric frame is formed on the common electrode.
14. (Original) The method of claim 1, further comprising forming an alignment layer on at least one of the first and second substrates.
15. (Original) The method of claim 14, wherein the alignment layer is selected from the group consisting of polyimide, polyamide, polyvinyl alcohol, polyamic acid, and silicon oxide.
16. (Withdrawn) The method of claim 14, wherein the alignment layer is selected from the group consisting of polyvinylcinnamate, polysiloxanecinnamate, and cellulosecinnamate.
17. (Original) The method of claim 1, further comprising forming a phase difference film on at least one of the first and second substrates.
18. (Original) The method of claim 17, wherein the phase difference film includes a negative uniaxial film.
19. (Previously Presented) The method of claim 17, wherein the phase difference film includes a negative biaxial film.
20. (Cancelled)
21. (Withdrawn) The method of claim 1, wherein the first height is a range of 1-2 μm and the second height is about 4 μm .
22. (Withdrawn) The method of claim 1, wherein the first height is a range of 1-1.5 μm and the second height is about 3 μm .

23. (Withdrawn) The method of claim 1, wherein the first height is about 1 μm and the second height is about 2 μm .
24. (Withdrawn) A method of forming a liquid crystal display device comprising:
forming a gate electrode on a first substrate;
forming a gate insulating film on the gate electrode and the first substrate;
forming a semiconductor layer on the gate insulating film;
forming source and drain electrodes on the semiconductor layer;
forming a pixel electrode contacting the drain electrode, the pixel electrode including an electric field inducing window;
forming a dielectric frame having a first height and a sealant having a second height on a second substrate, the first height of the dielectric frame being different from the second height of the sealant, the dielectric frame capable of causing an electric field distortion;
dispensing liquid crystal on the first substrate; and
attaching the first and second substrates to each other.
25. (Withdrawn) The method of claim 24, wherein the first height is a range of 1-2 μm and the second height is in a range of 5-8 μm .
26. (Withdrawn) The method of claim 24, wherein the first height is a range of 1-2 μm and the second height is about 4 μm .
27. (Withdrawn) The method of claim 24, wherein the first height is a range of 1-1.5 μm and the second height is about 3 μm .
28. (Withdrawn) The method of claim 24, wherein the first height is about 1 μm and the second height is about 2 μm .
29. (Cancelled)

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

There are no decisions rendered by the court or the Board regarding the Notice of Appeal filed May 4, 2010.